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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,218	08/08/2005	Kuniharu Ijiro	2005_0408A	2828

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WASHINGTON, DC 20006-1021

EXAMINER
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GROSS, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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1639

MAIL DATE	DELIVERY MODE
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01/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.		Applicant(s)	
	10/527,218		IJIRO ET AL.	
	Examiner		Art Unit	
	Christopher M. Gross		1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 17-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Responsive to communications entered 10/17/2007. Claims 17-24 are pending. Claims 17-24 are examined herein.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/17/2007 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Miscellaneous Issues***

It appears the PTO-892 mailed 7/17/2007 is in error with regard to the page numbers of the Ijiro reference. The correct citation is: Ijiro et al 2002 International Journal of Nanoscience 1: 597-601. A corrected PTO-892 form is enclosed with this office action along with a copy of the reference which does not appear to be properly entered into the record.

### ***Priority***

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 or 365 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the prior

application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Prods., Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994) [taken from MPEP 201.01]

This application has a filing date of 8/8/2005 and is a 371 of PCT/JP03/11514 filed 09/09/2003. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) to Japanese patent 2002-263434, filed 9/9/2002.

Applicant has amended claims 17, 20 and 23 to recite "a free space that allows for photisomerization of the photoisomerization group to occur" in lieu of "at least one nucleic acid base that is not capable of forming a base pair with [a] nucleic acid base" and has successfully pointed to the specification on p 6, lines 12-16 as providing support under 35 USC 112 first paragraph.

The examiner assumes that similar support can be found in application PCT/JP03/11514 filed 09/09/2003, filed in Japanese. It is noted however that no translation of Japanese patent 2002-263434, filed 9/9/2002 been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15

Therefore 9/9/2003 is the date for the purposes of prior art concerning claims 17-24.

***Withdrawn Rejection(s)***

The rejection of claims 17-24 under 35 U.S.C. 102(b) as being anticipated by **Ijiro et al** (2002 International J. Nanoscience 1:597-601) is hereby withdrawn in view of applicant's amendments to the claims.

The rejection of claims 17-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is hereby withdrawn in view of applicant's amendments to the claims.

***New Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-24 are rejected under 35 U.S.C. 102(a) as being anticipated by **Ijiro et al** (2002 International J. Nanoscience 1:597-601; published October 2002 – see EBSCO database printout).

The claimed subject matter per claim 17 is drawn to an organic monolayer membrane which comprises:

[i] amphiphilic compounds each having a photoisomerization group as a chromophore and a nucleic acid base (A), and

[ii] one or more oligonucleotides comprising a plurality of nucleic acid bases (B) capable of forming a base pair with the nucleic acid bases (A) wherein there is interposed between each of the nucleic acid bases (B) a free space that allows for photoisomerization of the photoisomerization group to occur (A),

[iii] wherein the nucleic acid bases (A) of the amphiphilic compounds form base pairs with the nucleic acid bases (B) of the one or more oligonucleotides, and

[iv] wherein the amphiphilic compounds align to form the organic monolayer membrane.

Claims 18-24 represent variations thereof.

Ijro et al teach, throughout the document and especially figure 1, the preparation of monolayers comprising amphiphilic compounds each having an azobenzene photoisomerization group as a chromophore and a thymine nucleic acid base, reading on claim 17 [i] and 20.

Also shown in figure 1 is an oligonucleotide (dGGA)<sub>10</sub> with adenine capable of forming a base pair with said thymine nucleic acid base wherein there is interposed between each of the nucleic acid bases, guanine bases which each provide a free space that allows for photoisomerization said azobenzene group.

The thymine group of said amphiphilic compound form base pairs with the adenine of said (dGGA)<sub>10</sub>, oligonucleotide reading on claim 17 [ii-iii] and 20.

Ijro et al discuss in the abstract, that said materials form a monolayer, reading on claim 17. [iv] and 20.

Said azobenzene group of Ijro et al reads on claims 18 and 23.

Ijro et al teach in figure 2, application of pressure which is taken as the compression set forth in claim 19, and absent evidence to the contrary condenses said membrane so as to form a laminate, as set forth in claims 21, 22 and 24. It is noted that the present specification defines lamination in paragraph 0015 of the published

application as: "a membrane obtained by compressing a monolayer is laminated on a solid substrate."

Claims 17, 18, 20, 23 are rejected under 35 U.S.C. 102(a) as being anticipated by **Shimomura et al** (2002 Kagaku Kogyo 53:501-505; published July 2002).

This rejection is based on an oral translation of the Shimomura et al reference, which was provided to the examiner on 1/3/2007 by Steven Spar of the Scientific and Technical Information Center (STIC) translation branch at the USPTO. A complete written translation of the reference will follow mailing of this Office Action under separate cover.

**Shimomura et al** teach, throughout the document and especially figures 5 and 6, monolayers comprising amphiphilic compounds each having an azobenzene photoisomerization group as a chromophore and a thymine nucleic acid base, reading on claim 17 [i] and 20.

Also shown in figure 6 is an oligonucleotide (dGGA)<sub>10</sub> with adenine capable of forming a base pair with said thymine nucleic acid base wherein there is interposed between each of the nucleic acid bases, guanine bases which each provide a free space that allows for photoisomerization said azobenzene group.

The thymine group of said amphiphilic compound form base pairs with the adenine of said (dGGA)<sub>10</sub>, oligonucleotide reading on claim 17 [ii-iii] and 20.

Said azobenzene group of Shimomura et al reads on claims 18.

Said amphiphilic compounds stack, as shown in figure 4, of Shimomura et al which is taken as aligning to form a membrane, such as set forth in the last lines of claims 17, 20 and 23.

The Japanese character for water in figure 5 is taken as the aqueous solution set forth in claim 20 line 4 and claim 23 line 4.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Gross whose telephone number is (571)272-4446. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. Douglas Schultz can be reached on 571 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher M Gross  
Examiner  
Art Unit 1639

cg



MARK L. SHIBUYA  
PRIMARY EXAMINER